

IN THE CLAIMS:

Please amend the claims as follows:

Claim 1 (Canceled)

Claim 2 (Currently Amended): An optical element comprising a plate, a light reflection portion, and a support portion which supports said light reflection portion over said plate; each of said light reflection portion and said support portion being constructed of at least one film; and

said support portion having one end part fixed to said plate and having an other end part joined with the film which constructs said light reflection portion, and bending from said one end part toward said other end part, thereby to support a principal plane of said film constructing said light reflection portion, non-parallelly to a principal plane of said plate.

An optical element as defined in claim 1, wherein said support portion supports the principal plane of said film constructing said light reflection portion, perpendicularly to the principal plane of said substrate plate.

Claim 3 (Currently Amended): An optical element comprising a plate, a light reflection portion, and a support portion which supports said light reflection portion over said plate; each of said light reflection portion and said support portion being constructed of at least one film; and

said support portion having one end part fixed to said plate and having an other end part

joined with the film which constructs said light reflection portion, and bending from said one end part toward said other end part, thereby to support a principal plane of said film constructing said light reflection portion, non-parallelly to a principal plane of said plate,

An optical element as defined in claim 1, wherein said support portion is constructed of a multilayer film in which at least two films having different coefficients of thermal expansion are stacked.

Claim 4 (Currently Amended): An optical element as defined in claim 4, further comprising a holding portion which keeps constant an angle between the principal plane of said film constructing said light reflection portion and the principal plane of said substrate plate.

Claim 5 (Currently Amended): An optical element as defined in claim 4, wherein: said holding portion is an angle holding portion which is interposed between said light reflection portion and said substrate plate; and
said angle holding portion includes a film which has one end part fixed to said substrate plate, and which bends from said one end part toward the other end part.

Claim 6 (Original): An optical element as defined in claim 5, wherein said angle holding portion lies in touch with either said light reflection portion or said support portion, and it includes positional shift prevention means for preventing a relative positional shift between said angle holding portion and said light reflection portion or said support portion, at the touch part of

said light reflection portion or said support portion.

Claim 7 (Original): An optical element as defined in claim 6, wherein said positional shift prevention means is a groovy structure which is formed in said light reflection portion or said support portion.

Claim 8 (Original): An optical element as defined in claim 5, wherein a film surface of said film of said angle holding portion is perpendicular to said principal plane of said light reflection portion, and a side surface of said film of said angle holding portion lies in touch with said light reflection portion.

Claim 9 (Canceled)

Claim 10 (Original): An optical element as defined in claim 5, wherein:
a sense of the bending of said film of said angle holding portion is reverse to a sense of the bending of said film constructing said support portion; and
a second light reflection portion is joined to said other end part of said film of said angle holding portion, and it is placed on said light reflection portion.

Claim 11 (Currently Amended): An optical element as defined in claim + 3, wherein said light reflection portion is suspended from said other end of the bent film of said support portion

toward said substrate plate.

Claim 12 (Currently Amended): An optical element as defined in claim 4, wherein said holding portion is a thin-film multilevel structure which lies in touch with ~~part of a member constituting said light reflection portion either said light reflection portion or said support portion~~, said thin-film multilevel structure has a plurality of unit structural members which are successively stacked on said substrate plate, said each unit structural member includes a support part and a flat part supported by said support part, said support part and said flat part are unitarily constructed of a continuous thin film, and the stacked unit structural members have the thin films secured to each other at parts where they touch each other.

Claim 13 (Original): An optical element as defined in claim 12, wherein said thin-film multilevel structure lies in touch with either said light reflection portion or said support portion, and it includes positional shift prevention means for preventing a relative positional shift between said thin-film multilevel structure and said light reflection portion or said support portion, at the touch part of said light reflection portion or said support portion.

Claim 14 (Original): An optical element as defined in claim 13, wherein said positional shift prevention means is a groovy structure which is formed in said light reflection portion or said support portion.

Claim 15 (Currently Amended): An optical element comprising a substrate plate, a light reflection portion, and a support portion which supports said light reflection portion over said substrate plate;

each of said light reflection portion and said support portion being constructed of at least one film;

said support portion including at least two coupled members, a first member of which has one end part fixed to said substrate plate and has the other end part joined through the other member with the film constructing said light reflection portion, and bends from said one end part toward said other end part, thereby to support a principal plane of said film constructing said light reflection portion, non-parallelly to a principal plane of said substrate plate.

Claim 16 (Original): An optical element as defined in claim 15, wherein said support portion includes the second member which serves to couple said first member and said film constructing said light reflection portion, said second member is a bent film, and a sense of the bending of said second member is reverse to a sense of the bending of said first member.

Claim 17 (Currently Amended): An optical element comprising a plate, a light reflection portion, and a support portion which supports said light reflection portion over said plate;
each of said light reflection portion and said support portion being constructed of at least one film; and

said support portion having one end part fixed to said plate and having an other end part

joined with the film which constructs said light reflection portion, and bending from said one end part toward said other end part, thereby to support a principal plane of said film constructing said light reflection portion, non-parallelly to a principal plane of said plate,

An optical element as defined in claim 1, wherein said film constructing said light reflection portion is formed with a stepped structure at its peripheral edge part.

Claim 18 (Currently Amended): An optical element comprising a plate, a light reflection portion, An optical element as defined in claim 1, further comprising a temperature regulation portion for regulating a temperature of said support portion[.] , and a support portion which supports said light reflection portion over said plate;

each of said light reflection portion and said support portion being constructed of at least one film; and

said support portion having one end part fixed to said plate and having an other end part joined with the film which constructs said light reflection portion, and bending from said one end part toward said other end part, thereby to support a principal plane of said film constructing said light reflection portion, non-parallelly to a principal plane of said plate.

Claims 19-21 (Canceled)

Claim 22 (Original): An optical switch comprising a mirror portion, and a movable portion on which said mirror portion is mounted;

said mirror portion including a light reflection portion, and a support portion which supports said light reflection portion over said movable portion;
 each of said light reflection portion and said support portion being constructed of at least one film;

 said support portion having one end part fixed to said movable portion and having the other end part joined with the film which constructs said light reflection portion, and bending from said one end part toward said other end part, thereby to support a principal plane of said film constructing said light reflection portion, non-parallelly to a principal plane of said movable portion.

Claim 23 (Original): An optical switch comprising a mirror portion, and a movable portion on which said mirror portion is mounted;

 said mirror portion including a light reflection portion, and a support portion which supports said light reflection portion over said movable portion;

 said light reflection portion being constructed of a film;

 said support portion including at least two coupled members, a first member of which has one end part fixed to said movable portion and has the other end part joined through the other member with said film constructing said light reflection portion, and bends from said one end part toward said other end part, thereby to support a principal plane of said film constructing said light reflection portion, non-parallelly to a principal plane of said movable portion.

Claim 24 (Withdrawn): A method of manufacturing an optical element, comprising:

the step of forming a sacrificial layer which has an opening, on a substrate;

the step of forming a support film of predetermined shape on that position of said sacrificial film which includes said opening, and forming a light reflection film on that position of said sacrificial film which is joined with one end part of said support film; and

the step of removing said sacrificial film, whereby said support film is bent by an internal stress of said support film so as to support a principal plane of said light reflection film non-parallelly to a principal plane of said substrate.

Claim 25 (Withdrawn): A method of manufacturing an optical element as defined in claim 24, wherein said sacrificial layer is formed of a resist.

Claim 26 (Withdrawn): A method of manufacturing an optical element as defined in claim 24, wherein said support film is formed of a stacked structure of at least two layers made of materials of different coefficients of thermal expansion.

Claim 27 (Original): An optical switch comprising a mirror portion which includes a light reflection member, a movable portion on which said mirror portion is mounted, and a holding portion which lies in touch with part of a member constituting said mirror portion, in order to keep an angle of said light reflection member;

said holding portion being a thin-film multilevel structure;

said thin-film multilevel structure having a plurality of unit structural members which are successively stacked on said movable portion;

said each unit structural member including a support part and a flat part supported by said support part, said support part and said flat part being unitarily constructed of a continuous thin film;

the stacked unit structural members having the thin films secured to each other at parts where they touch each other.

Claim 28 (Original): An optical switch as defined in claim 27, wherein said thin-film multilevel structure lies in touch with either said light reflection portion or said support portion, and it includes positional shift prevention means for preventing a relative shift between said thin-film multilevel structure and said light reflection portion or said support portion, at the touch part of said light reflection portion or said support portion.

Claim 29 (Original): An optical switch as defined in claim 28, wherein said positional shift prevention means is a groovy structure which is formed in said light reflection portion or said support portion.

Claim 30 (Original): An optical switch as defined in claim 27, wherein:
said mirror portion includes a support portion in order to support said light reflection member over said movable portion; and

said support portion includes at least two coupled members, a first member of which has one end part fixed to said movable portion and has the other end part joined with said light reflection member through the other member, and bends from said one end part toward said other end part, thereby to support said light reflection member non-parallelly to a principal plane of said movable portion.

Claim 31 (Original): An optical switch as defined in claim 27, wherein said thin film constructing said each unit structural member is formed with a stepped structure at its peripheral edge.

Claim 32 (Original): An optical switch as defined in claim 27, wherein said support part of the unit structural member located at an upper stage is mounted on said flat part of the unit structural member at an immediately lower stage.

Claim 33 (Original): An optical switch as defined in claim 32, wherein in the stacked unit structural members, said unit structural member located at the upper stage is smaller in the number of the support parts.

Claim 34 (Original): An optical switch as defined in claim 27, wherein in said plurality of unit structural members, the unit structural member of lowermost stage is constructed unitarily with said movable portion.

Claim 35 (Original): An optical switch as defined in claim 27, wherein at least one of said plurality of unit structural members is constructed by patterning the same thin film as a thin film which forms said member constituting said mirror portion.

Claim 36 (Original): An optical switch as defined in claim 27, wherein said thin film constructing said each unit structural member is a triple-layer film, in which a film of uppermost layer and a film of lowermost layer are of the same material.

Claim 37 (Original): An optical switch comprising a mirror portion which includes a light reflection member, a movable portion on which said mirror portion is mounted, and a holding portion which lies in touch with part of a member constituting said mirror portion, in order to keep an angle of said light reflection member;

 said holding portion being a thin-film multilevel structure;

 said thin-film multilevel structure having a plurality of unit structural members which are successively stacked on said movable portion;

 said each unit structural member including a support part which has a hollow opening, a flat part which covers said opening, and a filling material with which said hollow opening of said support portion is filled up, each of said support part and said flat part being formed of a thin film;

 the stacked unit structural members being such that said support part of the unit structural

member located at an upper stage is mounted on said flat part of the unit structural member at an immediately lower stage.

Claim 38 (Original): An optical switch as defined in claim 37, wherein said thin-film multilevel structure lies in touch with either said light reflection portion or said support portion, and it includes positional shift prevention means for preventing a relative shift between said thin-film multilevel structure and said light reflection portion or said support portion, at the touch part of said light reflection portion or said support portion.

Claim 39 (Original): An optical switch as defined in claim 38, wherein said positional shift prevention means is a groovy structure which is formed in said light reflection portion or said support portion.

Claim 40 (Original): An optical switch as defined in claim 37, wherein said thin film which constructs said support part of the unit structural member located at an upper stage, and said thin film which constructs said flat part of the unit structural member at a lower stage for mounting said support part are secured to each other.

Claim 41 (Original): An optical switch comprising a substrate, a movable portion one end part of which is fixed to said substrate, and a mirror portion which is mounted on a side of the other end part of said movable portion;

said movable portion being constructed of at least two films, and being bent by internal stresses of said at least two films, thereby to raise the other end part bearing said mirror portion, over said substrate;

said mirror portion including a light reflection member which is mounted on said movable portion so that a light reflection surface may be directed perpendicularly to a principal plane of said substrate;

said light reflection member being inclinedly mounted on said movable portion so that its upper end edge may become parallel to said substrate in a state where said movable portion has raised said mirror portion.

Claim 42 (Canceled)

Claim 43 (Currently Amended): An optical device comprising an optical element, a movable portion on which said optical element is mounted, and a substrate plate which holds said movable portion;

said movable portion being made of at least one film, having one end part fixed to said substrate plate and having said optical element mounted on a side of the other end part, at least a part near the fixed end part being formed of a stacked structure in which at least two films are stacked, said stacked structure being bent by an internal stress, thereby to support said other end part at a position remote from said substrate plate;

said movable portion being formed with a stepped structure along a peripheral edge of its

part bearing said optical element.

Claim 44 (Original): An optical device as defined in claim 43, wherein in order to form said stepped structure, said movable portion is formed with a convex portion along the peripheral edge of its part bearing said optical element.

Claim 45 (Currently Amended): An optical device comprising an optical element, a movable portion on which said optical element is mounted, and a substrate plate which holds said movable portion;

 said movable portion being, at least partially, a stacked structure made of at least two films, having one end part fixed to said substrate plate and having said optical element mounted on a side of the other end part, said stacked structure being bent by an internal stress, thereby to support said other end part at a position remote from said substrate plate;

 said stacked structure including a metal film, said metal film being patterned into a predetermined pattern, said pattern including an electrode pattern for an electrostatic force as acts as an electrode for driving said movable portion by the electrostatic force.

Claim 46 (Original): An optical device as defined in claim 45, wherein said pattern of said metal film further includes a current path pattern for a Lorentz force as acts as a current path for driving said movable portion by the Lorentz force.

Claim 47 (Currently Amended): An optical device as defined in claim 46, wherein said electrode pattern for said electrostatic force and said current path pattern for said Lorentz force are respectively connected to voltage applying wiring lines and current feeding wiring lines of said substrate plate through said one end part fixed to said substrate plate.

Claim 48 (Currently Amended): An optical device as defined in claim 43, wherein: said optical element includes an optical film which has a desired optical characteristic, and a support portion which supports said optical film over said movable portion; said support portion being constructed of at least one film; said support portion having one end part fixed to said substrate plate and having the other end part joined with a film constructing said optical film, directly or through another member, and bending from said one end part toward said other end part, thereby to support a principal plane of said film constructing said optical film, non-parallelly to a principal plane of said substrate plate.

Claim 49 (Canceled)

Claim 50 (Currently Amended): An optical device comprising a plate, an optical element which is mounted on said plate, and a suppression portion which serves to suppress a positional fluctuation of said optical element;
said optical element including an optical film which has a desired optical characteristic,

and a support portion which supports said optical film, said support portion including a bent film member, said film member having one end part fixed to said plate and having the other end part raised by said bent film member, thereby to support a principal plane of said optical film non-parallelly to a principal plane of said plate;

said suppression portion suppressing a positional fluctuation of said optical film in a normal direction of said optical film or in an upward direction,

~~An optical device as defined in claim 49, wherein said support portion includes not only said bent film member, but also a second bent film member, a joint portion, and an optical-film support portion on which said optical film is mounted;~~

~~said joint portion being joined to said other end part of the first-mentioned film member, said second film member having one end part joined to said joint portion and having said optical-film support portion joined to the other end part hanging down from said joint portion; and~~

~~said suppression portion suppressing a positional fluctuation of said optical-film support portion in order to suppress the positional fluctuation of said optical film.~~

Claim 51 (Currently Amended): An optical device as defined in claim 50, wherein said suppression portion is a member which is formed by cutting and bending part of said ~~substrate plate~~.

Claim 52 (Original): An optical device as defined in claim 50, wherein said suppression portion is a multistage multilevel structure which is formed by stacking multilevel structures

constructed of thin films, a plurality of stages.

Claim 53 (Original): An optical device as defined in claim 52, wherein said multistage multilevel structure has a hook-shaped part, and said hook-shaped part is inserted into an opening provided in said optical-film support portion.

Claim 54 (Original): An optical device as defined in claim 52, wherein said multistage multilevel structure has an extension part which hangs over said optical-film support portion.

Claim 55 (Currently Amended): An optical device as defined in claim 50, wherein said suppression portion includes a protuberant part which is provided from said optical-film support portion toward said substrate plate, and an opening which is provided in said substrate plate, and said protuberant part is snugly fitted in said opening.

Claim 56 (Currently Amended): An optical device comprising a plate, an optical element which is mounted on said plate, and a suppression portion which serves to suppress a positional fluctuation of said optical element;

said optical element including an optical film which has a desired optical characteristic, and a support portion which supports said optical film, said support portion including a bent film member, said film member having one end part fixed to said plate and having the other end part raised by said bent film member, thereby to support a principal plane of said optical film non-

parallelly to a principal plane of said plate; and

said suppression portion suppressing a positional fluctuation of said optical film in a
normal direction of said optical film or in an upward direction,

An optical device as defined in claim 49, wherein said substrate plate is a movable
substrate plate for moving said optical element, and it is constructed of at least one film.